

WHAT IS CLAIMED IS:

1. A non-linear resistor comprising
a sintered body having zinc oxide as a main
component;

5 a side-surface high resistance layer arranged at
a side-surface of the sintered body; and

an electrode arranged at upper and lower surfaces
of the sintered body,

wherein

10 an end-to-end distance between an end portion of
the electrode and a nonlinear resistor end portion
including the side-surface high resistance layer falls
within a range of 0 mm to a thickness of the side-
surface high resistance layer + 0.01 mm; and

15 the side-surface high resistance layer is formed
of at least one element selected from substances
containing, as a main substance, an inorganic polymer
substance having electric insulating characteristics
and heat resistance, an amorphous inorganic polymer
20 substance, a glass compound, an amorphous inorganic
substance, a crystalline inorganic substance, and an
organic polymer compound.

2. The nonlinear resistor according to claim 1,
wherein the amorphous polymer substance is an aluminum
25 phosphate based inorganic adhesive which is an
inorganic polymer, an amorphous silica, amorphous
alumina or a complex of amorphous silica and

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organosilicate;

the glass compound is a glass containing lead as a main component, a glass containing phosphorus as a main component, or a glass containing bismuth as a main component;

the crystalline inorganic substance is a crystalline inorganic substance containing Zn-Sb-O as a constitutional component; a crystalline inorganic substance containing Zn-Si-O as a constitutional component; a crystalline inorganic substance containing Zn-Sb-Fe-O as a constitutional component; a crystalline inorganic substance containing Fe-Mn-Bi-Si-O as a constitutional component; a crystalline silica (SiO_2); alumina (Al_2O_3); mullite ($\text{Al}_6\text{Si}_2\text{O}_{13}$), cordilight ($\text{Mg}_2\text{Al}_4\text{Si}_5\text{O}_{18}$), titanium oxide (TiO_2), or zirconium oxide (ZrO_2);

the organic polymer compound is an epoxy resin, polyimide resin, phenol resin, melamine resin, fluorocarbon resin, silicon resin; and

the side-surface high resistance layer is formed of at least one type selected from the group containing the aforementioned materials and materials having a complex formed of at least two types of materials selected from the aforementioned materials, as a main component.

3. The nonlinear resistor according to claim 1, wherein a thickness of the side-surface high resistance

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layer falls within a range of 1 μm to 2 mm.

4. The nonlinear resistor according to claim 1,
wherein the side-surface high resistance layer is
adhered to the sintered body so as to have a shock
adhesive strength of 40 mm or more.

5. The nonlinear resistor according to claim 1,
wherein a material of the electrode is selected from
the group consisting of aluminium, copper, zinc,
nickel, gold, silver, titanium and alloys thereof.

6. The nonlinear resistor according to claim 1,
wherein an average thickness of the electrode falls
within a range of 5 μm to 500 μm .

7. A method of forming a nonlinear resistor
according to claim 1, comprising:

forming a side-surface high resistance layer at
a side-surface of a sintered body containing zinc oxide
as a main component; and

forming an electrode at upper and lower surfaces
of the sintered body,

wherein the electrode is formed by a method
selecting from the group consisting of plasma spraying,
arc spraying, high-speed gas flame spraying, screen
printing, deposition, transferring, and sputtering.

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